

LISTING OF CLAIMS

These claims replace all previous versions of claims in the application:

Claims 1-2 (Cancelled).

3. (Withdrawn) The process according to Claim 1, wherein said co-surfactants are selected from the group consisting of alkyl acid phosphates, alkyl acid sulfonates, alkyl alcohols, substituted alkyl alcohols, perfluoroalkyl alcohols, dialkyl sulfosuccinates, bis-(2-ethyl-hexyl) sulfosuccinates, AOT, salts thereof, and combinations thereof.

4. (Cancelled).

5. (Withdrawn) The process according to Claim 1, further comprising the step of rinsing said substrate with a densified fluid comprising up to about 30% modifiers by volume.

6. (Withdrawn) The process according to Claim 5, wherein said densified fluid is a pure densified fluid absent any added modifiers.

7. (Withdrawn) The process according to Claim 5, wherein said densified fluid is a mixture of densified CO₂ and a modifier selected from the group consisting of isopropyl alcohol, H₂O, methanol, ethanol, and combinations thereof.

8. (Withdrawn) The process according to Claim 7, wherein said densified fluid comprises up to about 15% by volume isopropyl alcohol.

Claims 9-11 (Cancelled).

12. (Withdrawn) The process according to Claim 1, wherein said reactive cleaning fluid has a temperature and pressure above the critical temperature and critical pressure of said densified fluid.

Claims 13-15 (Cancelled).

16. (Withdrawn) The process according to Claim 14, wherein said cationic reverse-micelle forming surfactant is selected from the tetraoctylammonium fluoride class of compounds.

17. (Withdrawn) The process according to Claim 14, wherein said non-ionic reverse-micelle forming surfactant is selected from the poly-ethyleneoxide-dodecyl-ether class of compounds.

18. (Withdrawn) The process according to Claim 14, wherein said zwitterionic reverse-micelle forming surfactant is selected from the alpha-phosphatidylcholine class of compounds.

19. (Withdrawn) The process of Claim 1, wherein said reactive chemical agent is selected from the group consisting of mineral acids, fluoride-containing compounds and acids, organic acids, oxygen-containing compounds, amines, alkanolamines, peroxides, chelates, ammonia, and combinations thereof.

20. (Withdrawn) The process according to Claim 19, wherein said mineral acids are selected from the group consisting of HCl, H₂SO₄, H₃PO₄, HNO₃, HSO₄⁻, H₂PO₄, HPO₄²⁻, phosphate acids, acid sulfonates, dissolution products thereof, salts thereof, and combinations thereof.

21. (Withdrawn) The process according to Claim 19, wherein said fluoride-containing compounds and acids are selected from the group consisting of F₂, HF, dilute HF, ultra-dilute HF, and combinations thereof.

22. (Withdrawn) The process according to Claim 19, wherein said organic acids are selected from the group consisting of sulfonic acids, phosphate acids, phosphate esters or their salts, substituted derivatives thereof, and combinations thereof.

23. (Withdrawn) The process according to Claim 19, wherein said oxygen-containing compounds are selected from the group consisting of O₂, ozone, and combinations thereof.

Claims 24-25 (Cancelled).

26. (Withdrawn) The process according to Claim 19, wherein said chelating agent is selected from the group consisting of pentanediones; 2,4 pentanediones; phenanthrolines; 1,10 phenanthroline; EDTA, sodium EDTA, oxalic acid, and combinations thereof.

27. (Withdrawn) The process according to Claim 19, wherein said peroxides are selected from the group consisting of organic peroxides, alkyl peroxides, t-butyl peroxides, hydrogen peroxide, substituted derivatives, and combinations thereof.

28. (Cancelled).

29. (Withdrawn) The process in accordance with Claim 28, wherein said reactive cleaning fluid comprises from about 2% to about 5% modifiers by volume selected from the group consisting of PFPE acid phosphates, AOT, salts thereof, H₂O, and combinations thereof.

30. (Cancelled).

31. (Withdrawn) The process in accordance with Claim 28, wherein said reactive cleaning fluid further comprises a corrosion inhibitor having a concentration in the

range from about 0.1% to about 1% by volume.

32. (Withdrawn) The process in accordance with Claim 31, wherein said corrosion inhibitor is selected from the group consisting of benzotriazoles; 1,2,3-benzotriazole; catechols; catechol; 1,2-di-hydroxy-benzene; 2-(3,4-di-hydroxy-phenyl)-3,4-di-hydro-2H-1-benzopyran-3,5,7-triol, substituted derivatives thereof, and combinations thereof.

Claims 33-39 (Cancelled).

40. (Withdrawn) The process of Claim 1, wherein contacting of said residue with said reactive cleaning fluid is preceeded by etching of said substrate.

41. (Cancelled).

42. (Withdrawn) The process of Claim 41, wherein manufacturing of said substrate or wafer further comprises a processing step selected from the group consisting of etching, residue removing, cleaning, transferring, rinsing, depositing, and combinations thereof.

43. (Withdrawn) The process of Claim 42, wherein said transferring comprises moving said substrate or wafer with a transfer system or device during manufacturing of said wafer.

44. (Withdrawn) The process of Claim 42, wherein depositing comprises deposition of a material to said substrate or wafer selected from the group consisting of metals, non-metals, silicon, films and layers thereof, or combinations thereof.

Claims 45-70 (Cancelled).

71. (New) A process for chemically removing a residue from a surface, comprising the steps of:

applying a densified fluid with a plurality of reverse micelles suspended therein upon said surface, each reverse micelle having a polar inner core that contains at least one preselected chemical reagent therein;

reacting said residue with said preselected chemical reagent to form a complex; and

dissolving said complex in said densified fluid to remove said residue from said surface.

72. (New) The process of Claim 71, further comprising the step of encapsulating said complex within a structure prior to dissolving said complex in said densified fluid.

73. (New) The process of Claim 72, wherein said structure is a micelle.

74. (New) The process of Claim 72, wherein said structure is a reverse micelle.

75. (New) The process of Claim 72, wherein said densified fluid is carbon dioxide having a temperature in the range from about 20 °C to about 25 °C, a pressure in the range from about 850 psi to about 3000 psi, and a density above the critical density of CO₂, and the reverse micelles are comprised of PFPE ammonium carboxylate, and the chemical reagent is an amine.

76. (New) The process of Claim 72, wherein said densified fluid further comprises a co-solvent.

77. (New) The process of Claim 72, wherein said at least one chemical reagent is selected from the group consisting of hydroxylamine, H₂O, and combinations thereof.

78. (New) The process of Claim 71, wherein said densified fluid further comprises a modifier selected from the group consisting of amines, alkylamines, benzotriazoles, catechols, and combinations thereof.

79. (New) The process of Claim 72, wherein said residue is a transition metal.

80. (New) The process of Claim 79, wherein said residue is copper.

81. (New) The process of Claim 71, further comprising the step of rinsing said substrate with a densified fluid between 2 and 5 times.

82. (New) The process of Claim 71, wherein said substrate is contacted by said chemical reagent for less than 5 minutes.

83. (New) The process of Claim 71, wherein said process is performed at a temperature at or about 20 to 25 degrees C at a pressure of about 2900 psi.